CTCYBR001 Cybersecurity Fundamentals

Credit Hours: 3 Semester Hours
Pre-Requisite:
Related TAG: Information Technology
Related CTAG: Cybersecurity
General Course Description: This course will provide the student with basic knowledge of cybersecurity dynamics and is the entry point for students desiring to major in Computer Security Systems. The course will address issues involving hackers, malware, social theories, protocols, firewalls, and intrusion detection. In addition, this course will discuss the prevention and containment of intrusion incidents, the incident response process, and the forensic examination of a computer.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered:
Learning Outcome 1. *Discuss the social theories of computer-enabled abuse and the role of compliance framework in mitigating abuse.
Learning Outcome 2. *Discuss the malicious user's motivation such as social engineering and cyber warfare.
Learning Outcome 3. *Explain worms, trojans, viruses, spyware, ransomware other types of malicious software.
Learning Outcome 4. *Demonstrate an understanding of how encryption can be used and abused (such as Public Key, cryptography, symmetric cryptography, algorithm length, escrow, key recover, key splitting, random number generator, nonce, initialization vector, cryptographic mode, plaintext, cipher text, S/MIME, PGP, IPsec, TLS).
Learning Outcome 5. *Describe the standards and communication protocols associated with cybersecurity.
Learning Outcome 6. *Categorize various types of network and computer attacks and the actors that might perform them (potential system attacks, MITM attacks, DOS attacks, black hat attackers (nation states), etc.).
Learning Outcome 7. * Compare firewalls, intrusion detection, and intrusion prevention.
Learning Outcome 8. *Examine how information security can be used to mitigate cyber-crimes.
Learning Outcome 9. *Create a plan to defend against cyber-attacks.
Learning Outcome 10. *Formulate an incident response plan.

CTPROG001 Computer Logic

Credit Hours: 3 Semester Hours
Pre-Requisite:
Related TAGs: Information Technology/ Information Systems
Related CTAG: Programming
General Course Description: This course introduces students to the concepts of logic in computer programming design. Students will use tools such as flowcharts and pseudocode to model problem solutions. The course will cover logic structures such as sequencing, selection and looping. Students will also learn about data types, arrays, and using variables for input/output operations. Data validation and program debugging techniques will also be covered.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered:
Learning Outcome 1. *Describe the process of program development.
Learning Outcome 2. *Identify programming languages and their applications.
Learning Outcome 3. *Use modeling tools such as using pseudocode and/or flowchart to solve programming problems.
Learning Outcome 4. *Identify data types and use variables for input and output operations and demonstrate the ability to create logical expressions and mathematical calculations.
Learning Outcome 5. *Utilize data structures, such as an array, to store and manipulate a collection of related elements.
Learning Outcome 6. *Identify and use conditional logic structures such as decision structures and loops.
Learning Outcome 7. * Describe and use error-checking, debugging and data validation.
Learning Outcome 8. * Create program documentation.
Learning Outcome 9. * Create and use functions and modules.

CTIT017 Cisco I: CCNA 7- Introduction to Networks

Credit Hours: 3-4 Semester Hours
Pre-Requisite:
Related TAG: Information Technology
Related CTAG: Information Support Services and Networking
General Course Description: Introduction to Networks (ITN) covers the architecture, structure, functions and components of the Internet and other computer networks. Students achieve a basic understanding of how networks operate and how to build simple local area networks (LAN), perform basic configurations for routers and switches, and implement Internet Protocol (IP).
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered. The learning outcomes are dictated by the credential examination.
Learning Outcome 1. * Configure switches and end devices to provide access to local and remote network resources
Learning Outcome 2. * Explain how physical and data link layer protocols support the operation of Ethernet in a switched network.
Learning Outcome 3. * Configure routers to enable end-to-end connectivity between remote devices
Learning Outcome 4. * Create IPv4 and IPv6 addressing schemes and verify network connectivity between devices.
Learning Outcome 5. * Explain how the upper layers of the Open Systems Interconnect (OSI) model support network applications.
Learning Outcome 6. * Configure a small network with security best practices.
Learning Outcome 7. * Troubleshoot connectivity in a small network.

CTIT018 Cisco I: CCNA 7- Switching, Routing, and Wireless Essentials (SRWE)

Credit Hours: 3-4 Semester Hours
Pre-Requisite:
Related TAG: Information Technology
Related CTAG: Information Support Services and Networking
General Course Description: Switching, Routing, and Wireless Essentials (SRWE) covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLAN) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols in both IPv4 and IPv6 networks.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered. The learning outcomes are dictated by the credential examination.
Learning Outcome 1. * Configure Virtual Local Area Network (VLANs) and Inter-VLAN routing applying security best practices.
Learning Outcome 2. * Troubleshoot inter-VLAN routing on Layer 3 devices.
Learning Outcome 3. * Configure redundancy on a switched network using Spanning Tree Protocol (STP) and Port Link Aggregation (EtherChannel).
Learning Outcome 4. * Troubleshoot Port Link Aggregation (EtherChannel) on switched networks.
Learning Outcome 5. * Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols.
Learning Outcome 6. * Configure dynamic address allocation in IPv6 networks.
Learning Outcome 7. * Configure WLANs using Wireless LAN Controllers (WLC) and L2 security best practices.
Learning Outcome 8. * Configure switch security to mitigate local area network (LAN) attacks.
Learning Outcome 9. * Configure IPv4 and IPv6 static routing on routers.

CTIM004 Internet and Web Languages

Credit Hours: 3 Semester Hours
Pre-Requisite:
Related TAG: Information Technology
Related CTAG: Interactive Media
General Course Description: Course Description: Internet and Web Languages is an introductory course in Internet technologies and creating Web sites using markup, styling, and scripting languages such as HTML and CSS. Students understand the general nature, function, and structure of the Internet and World Wide Web and develop a simple, static, Web site using a text editor.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered:
Learning Outcome 1. *Articulate how the Internet and World Wide Web function, including the client/server architecture, the role of Internet Service Providers, and apply basic Internet applications.
Learning Outcome 2. *Understand the issues related to interface design for the World Wide Web.
Learning Outcome 3. *Apply functions of Web various Web languages, including but not limited to HTML, XHTML, XML, CSS, JavaScript.
Learning Outcome 4. *Build a Web page using current HTML and CSS standards to establish document structure and content.
Learning Outcome 5. *Design and build a Web site including page layout and navigation using appropriate web tools.

CTPROG002 Java Programming

Credit Hours: 3 Semester Hours
Pre-Requisite:
Related TAG: Computer Science
Related CTAG: Programming
General Course Description: This course introduces object-oriented concepts such as instantiation, polymorphism, inheritance, and encapsulation. Students will learn how to create classes, objects and methods. Java data types, data structures, and events will be covered. Students will use Java to create console, desktop, and mobile applications.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered. The learning outcomes are dictated by the credential examination.
Learning Outcome 1. * Apply object-oriented concepts to develop programs, including encapsulation, abstraction, inheritance, polymorphism, and interfaces.
Learning Outcome 2. * Use development tools to develop programs.
Learning Outcome 3. * Create classes, objects, and methods using an object-oriented language.
Learning Outcome 4. * Use primitive and reference data types in computational and string operations.
Learning Outcome 5. * Use error checking and exception handling in program development.
Learning Outcome 6. * Debug and test program code.
Learning Outcome 7. * Test and validate program output.
Learning Outcome 8. * Use data structures in program development.
Learning Outcome 9. * Use I/O methods to develop programs.
Learning Outcome 10. * Write executable object-oriented source code.

CTPROG003 C++ Programming

Credit Hours: 3 Semester Hours
Pre-Requisite:
Related TAG: Computer Science
Related CTAG: Programming
General Course Description: This course introduces object-oriented concepts such as instantiation, polymorphism, inheritance, and encapsulation. Students will learn how to create classes, objects, and member functions. C++ data types, pointers, structures, and arrays will be covered. Students will use C++ to create object oriented console programs.
Student Learning Outcomes marked with an asterisk (*) are considered essential and must be covered. The learning outcomes are dictated by the credential examination.
Learning Outcome 1. * Apply object-oriented concepts to develop programs.
Learning Outcome 2. * Use development tools to develop programs.
Learning Outcome 3. * *Create classes, objects, and methods using an object oriented language.
Learning Outcome 4. * Use primitive and reference data types such as pointers in computational and string operations.
Learning Outcome 5. * Use error checking and exception handling in program development.
Learning Outcome 6. * Debug and test program code.
Learning Outcome 7. * Test and validate program output.
Learning Outcome 8. * Use data structures in program development.
Learning Outcome 9. * Use logic structures to develop programs.
Learning Outcome 10. * Use I/O methods to develop programs.
Learning Outcome 10. * Produce object-oriented source code.